

Non Sibi High School

Andover's Chem 550/580: Advanced Chemistry

Chapter 7, Review Quiz 1

1

Determine the number of protons, neutrons, and electrons in:

- a neutral platinum-198 atom
- $^{126}\text{Te}^{2-}$
- $^{54}\text{Cr}^{3+}$

2

Write a symbol that includes atomic number, mass number, and charge for the species with 51 protons, 72 neutrons, and 54 electrons.

3

Copper has two naturally occurring isotopes, copper-63 and copper-65. Calculate the average atomic mass of copper using the information in the table below:

isotope	mass	% natural abundance
^{63}Cu	62.930	69.12%
^{65}Cu	64.928	30.88%

4

Write the complete electron configuration and specify the number of valence electrons for bismuth.

5

Write the shorthand noble gas electron configuration and specify the number of valence electrons for zirconium.

6

Write the shorthand noble gas electron configuration for:

- As³⁻
- Pb²⁺ and Pb⁴⁺

7

For each of the following, write the orbital diagram, determine the number of unpaired electrons, and state whether the atom or ion is paramagnetic or diamagnetic:

- Po
- V³⁺

8

State whether each set of quantum numbers is acceptable or not acceptable. For those that are not acceptable, explain why:

- (1, 0, 1, +1/2)
- (2, 2, 1, -1/2)
- (3, 1, -1, 0)
- (5, 3, -3, +1/2)



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